



TECHNICAL MEMORANDUM
UPPER AQUIFER INVESTIGATION
MONITORING WELL AND SAMPLING
PROPOSAL

AMERICAN CHEMICAL SERVICE, INC.
NPL SITE
GRIFFITH, INDIANA

PREPARED FOR
ACS RD/RA EXECUTIVE COMMITTEE

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PREPARED BY
MONTGOMERY WATSON
ADDISON, ILLINOIS

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PROCEDURES

Field Sampling

Upper aquifer groundwater sampling from the hydraulic probes was conducted in accordance with the SOP for the Upper Aquifer Investigation (revision: January 19, 1996) with the following exceptions:

- The number of shallow groundwater samples collected during the Upper Aquifer Investigation in all of the areas was expanded to include additional sample locations. The total number of sampling locations increased from the 50 locations estimated in the Work Plan to 110 locations utilized for this investigation.
- The number of samples collected from a depth of ten feet below the watertable in the upper aquifer in Area A increased from the two specified in the Work Plan to eight locations, including six requested by the U.S. EPA during the investigation (GP52A, GP57A, GP66A, GP68A, GP70A, and GP71A).
- The originally planned "deep" samples were collected at GP50A and GP51A. Because clay was found to be located at less than a ten foot depth, these samples were collected at a depth of 9 and 7 feet below the water table respectively.
- Sample GP115 was added at U.S. EPA request, between GP70 and the landfill.
- No samples were collected from locations GP131 and GP147 because water could not be drawn through the fine sand clogged geoprobe screen.
- Purge volumes were reduced for some low-yielding sample locations, including GP112, GP121, GP122, GP131, GP132, GP153, GP157, GP160, and GP161.
- The sample from GP54 was not analyzed because the odor and color indicated that it was contaminated. A groundwater sample was subsequently collected approximately 100 feet west of this location to delineate the extent of contamination (GP53).
- Two samples were collected from a depth of four feet rather than five feet below the watertable due to inadvertent placement of the slotted screen at GP91 and GP119.
- Water could not be collected from the five foot depth at location GP145, so the probe was driven and additional two feet in depth and the sample was collected from a depth of seven feet.
- A sample could not be collected at location GP72 because of cold weather conditions. A sample was subsequently collected in the same area, and identified as GP80.

- Two sampling locations, GP87 and GP90, yielded foamy samples, so zero-headspace samples could not be collected. The samples were brought to the field GC for immediate analysis from these locations.
- As a result of fine sand clogging the well point used in accordance with the SOP, water samples obtained from GP151 through GP161 were collected by advancing a finely slotted screen (0.010 inch slotted rod 36 inches long by 0.76-inch diameter) enclosed inside the lead probe to the desired sampling depth (5 feet below the watertable). The probe casing was retracted from around the screen, exposing the screen in the aquifer. Water samples were then collected from the probe in accordance with the approved SOP.

Field GC Analysis

The approved SOP for the Upper Aquifer Investigation required that upper aquifer samples be analyzed for the compounds: benzene, ethylbenzene, toluene, xylene, chlorobenzene, 1,2-dichloroethene (1,2-DCE), and 1,1-dichloroethane (1,1-DCA). The following were also included in the analysis for the upper aquifer investigation:

- 1,1-dichloroethene (1,1-DCE), 1,1,1-trichloroethane (1,1,1-TCA), trichloroethene (TCE), tetrachloroethene (PCE), acetone, methyl isobutyl ketone (MIBK), methyl ethyl ketone, carbon tetrachloride, and styrene.

RESULTS AND CONCLUSIONS

Table 1 presents the location coordinates and sampling depths of the upper aquifer groundwater samples. Field analytical results for benzene, acetone, BETX and total VOCs are presented in Table 2. Because benzene and acetone were most frequently detected in shallow groundwater at the site, concentrations of benzene and acetone are also plotted on Figures 3 and 4, respectively. Field GC analytical reports for the target compounds in all samples are tabulated in Appendix A. A discussion of the analytical results and conclusions associated with the Upper Aquifer Investigation is presented according to applicable area of the Site (i.e., A, B, C, or D).

Acetone was added to the target analyte list after the field GC protocol had been established in the Specific Operating Procedures section of the Work Plan, because acetone was detected in a number of the water samples collected during the investigation. However, it is likely that concentrations of acetone below 50 ug/L in groundwater samples are attributable to instrument contamination. Acetone is not well-suited for purge and trap GC analysis utilized for this investigation since it is a highly volatile and polar compound. Because the purge and trap methodology produces moisture within the system, acetone may be attenuated within the trap by the moisture and subsequently elute during multiple purge and trap analyses. In laboratory settings, acetone is a common contaminant which most analytical laboratories equipped with rigorous QA/QC procedures do not report at concentrations less than 20 ug/L.

Acetone has also been identified in vegetation, insects and bacteria as a naturally occurring volatile metabolite. Acetone is a breakdown product of alcohols and is produced through anaerobic degradation of organic matter. Near the ACS site, where wetland areas and farm fields are abundant, organic matter is available in soils at high concentrations (percent levels) for anaerobic degradation and may be contributing to the production of naturally occurring acetone.

Therefore, detections of low concentrations of acetone with a field GC (i.e., less than 50 ug/L) should be viewed as probable instrument cross-contamination or naturally occurring breakdown products, rather than viewed as representative of groundwater contamination.

Area A - Wetland Area West of the ACS Facility

Results

VOCs, primarily benzene and acetone, were detected in the wetland area west of the ACS facility. Figures 3 and 4 show the concentrations of benzene and acetone detected in the area, respectively. Acetone was the most prevalent VOC detected in Area A found in 11 samples (Figure 4). The highest level of acetone was found in GP58 where acetone was detected at an estimated concentration of 50,600 ug/L. However, at a distance of approximately 100 feet west and southwest of this location, acetone was not detected above quantitation limits. South of GP58 and GP60, acetone was detected at significantly lower concentrations (Figure 4).

Benzene was only detected in three samples in the wetland, GP53, GP55, and GP57, at concentrations of 550 ug/L, 5000 ug/L and 400 ug/L, respectively. Other VOCs detected in groundwater samples collected from GP53 and GP55 include cis- and trans-1,2-DCE and toluene (Appendix A).

A comparison of the eight deeper groundwater samples collected adjacent to shallow samples is shown in Table 3. At GP57, both benzene and acetone were detected at higher concentrations in the 10 foot deep sample compared to five foot deep sample. At the other nested sample locations, acetone was the only VOC detected in samples (GP50, GP68) and was found at slightly higher concentrations in the deep samples. No VOCs were detected in either the shallow or the deeper samples collected at GP51, GP52, GP66, GP70 and GP71.

Conclusions

The extent of contamination in the upper aquifer has been defined in the wetland area west of the ACS facility. A line of "zero" VOC concentrations was established in the upper aquifer by samples (from north to south) GP62, GP61, GP66, GP52, GP71, GP51 and GP70. This is consistent with Objective #1 established for the Area A investigation.

The line of "zero" contamination forms a sharp boundary which coincides with the border between the wetland area to the west and dry land to the east. In the area near GP57, benzene concentrations sharply decreased from 5000 ug/L at GP57 to less than detection limits at GP58 located approximately 100 feet west. Other areas exhibit a similar abrupt

decrease in contaminant concentration over a relatively small distance. This sharp boundary is unlike other areas of the site which typically exhibit groundwater contamination as a gradational zone. The sharp contrast between contaminated and non-contaminated groundwater in Area A is likely due to the wetland area acting as a discharge boundary for the upper aquifer groundwater flow system. The wetland areas have standing water and there is essentially no horizontal gradient beneath the wetlands. Therefore, there is no driving force to push the benzene contaminated water further out into the wetland.

The results of the deep groundwater samples in the upper aquifer indicate that VOC sampling five feet below the water table provide results that are representative of the entire saturated thickness of the upper aquifer. This is evidenced by the lack of VOC detections in shallow and deep groundwater samples GP51/GP51A, GP52/GP52A, GP66/GP66A, GP70/GP70A and GP71/GP71A which are located downgradient of samples containing higher concentrations of VOCs. This data shows that objective #2 for Area A has been met.

Area B - East of Colfax, South of Reder Road

Results

VOCs were detected in many of the groundwater samples collected in Area B (Table 2). Figures 3 and 4 show the concentrations of benzene and acetone, respectively, detected in the area. The highest VOC concentrations were found in groundwater samples collected just north of the UST located at the City of Griffith landfill and south of the intersection of Colfax and Reder Roads. Benzene was detected as high as 6,950 ug/L near the former UST (GP124), and was also found at elevated concentrations south of Reder Road (4,580 ug/L in GP121, and 3,430 ug/L in GP82). Acetone was detected near the UST, ranging in concentration from 3,900 ug/L in GP87 to 6,000 ug/L in GP123, and south of Reder Road at concentrations ranging from 834 ug/L in GP122 to 4,780 ug/L in GP121 (Figure 4). Other VOCs detected in the area include 1,2-dichloroethane, 1,1,1-TCA, toluene, ethylbenzene, xylenes and styrene (Appendix A).

South of the intersection of Colfax and Reder Roads, the highest concentrations of VOCs, primarily benzene, acetone, ethylbenzene and xylene, were detected at GP116, GP120, GP128 and GP134. These sampling locations are generally located in a north-south line approximately 600 to 700 feet east of Colfax Road (see Figure 2). East and west of this line, VOCs were either generally not detected or found at concentrations significantly less than the central line. VOCs were not found in GP84, GP85, GP86, and GP132 to the east of this line, whereas to the west, VOCs were not detected in GP118, GP129, GP135 and GP145 (Table 2).

Benzene concentrations in the central plume decreased from GP82 (3,430 ug/L) to the north to GP120 (131 ug/L), then increased again to the south from GP120 (131 ug/L) to GP128 (506 ug/L) to GP134 (1100 ug/L). South of GP134, benzene concentrations decreased again at GP143, GP144 and GP156 (Figure 3). The southern and southeastern extent of benzene contamination in the upper aquifer was delineated by groundwater samples

collected at GP151 to GP155 and GP158 and GP159. Benzene was not detected at sample locations GP135 and GP145 located further to the west.

Acetone concentrations generally decreased with distance to the south from the site (Figure 4). The southernmost detection of acetone occurred at GP156, located approximately 1600 feet southeast of the intersection of Colfax and Reder roads, where acetone was detected at 34 ug/L. Acetone was not detected in GP118, GP129 GP144, and GP155 to the west, GP159 and GP158 to the southeast, and GP85, GP132, GP151, and GP152 and to the east. Two isolated detections of acetone occurred at GP153 and GP157 where acetone was found at 15 ug/L and 38 ug/L, respectively.

Conclusions

There are several potential sources of elevated BETX concentrations upgradient of monitoring well MW6, near the intersection of Colfax and Reder Roads. Possible sources include the UST area at the City of Griffith garage, the Off-Site Containment area and the area designated as the Kapica-Pazmey area in the RI.

It appears that there is a zone of VOC contamination in the upper aquifer extending from the Kapica-Pazmey area, south from monitoring well MW-6 to MW-19 and beyond. The increasing benzene concentrations in GP128 and GP134, located approximately 1000 feet southeast of the Off-Site Containment area and UST, may indicate that another source is present in the area. One potential source is a petroleum pipeline which trends east-west through the investigation area from east of GP145 to west of GP152. Groundwater elevation data collected in this area from several planned new monitoring wells will be useful in determining whether there is benzene migration northward from the pipeline.

The extent of VOC contamination in the upper aquifer south of Reder Road was defined during the investigation. A line of "zero" VOC detections can be established in the upper aquifer by samples which surround the plume of benzene and acetone to the west, south and east. This is consistent with Objective #1 established for the Area B investigation. With respect to Objective #2, the UST area in the Griffith town yard cannot be ruled out as an additional source of benzene.

Area C - Southwest of Griffith Landfill

Results

Acetone was the only VOC detected in Area C at three sampling locations. The acetone concentrations range from 34 ug/L in GP73 to 57 ug/L in GP74. Concentrations of acetone detected in GP73 and GP74 were not detected in groundwater samples collected 200 feet southwest (Figure 4).

Conclusions

The results indicate there is not significant VOC contamination extending to the southwest from the site. This satisfies the objective established for the Upper Aquifer Investigation in Area C. The sporadic low level detections of acetone do not form a pattern recognizable as

a contaminant plume. The source of the acetone appears to be attributable to laboratory contamination or naturally occurring processes.

Area D - North and East Perimeter

Results

East of Colfax Road, VOCs were detected in groundwater samples collected from GP90, GP91, GP92, GP93 and GP94. The highest VOC concentrations were found in GP90, located near the intersection of Colfax and Reder Roads, where cis-1,2-DCE, total BETX, and MIBK were detected at 25,700 ug/L, 52,720 ug/L and 8960 ug/L, respectively (Appendix A). At GP91, located 200 feet north of GP90, total VOC concentrations decreased to 16.2 ug/L, and at GP101, located approximately 400 feet east, VOCs were not detected.

VOCs were detected above quantitation limits in only one of the upper aquifer groundwater samples collected east of the north-south line of points defined by GP90 to GP93. The VOC, 1,2-DCA, was detected at a concentration of 10 ug/L in GP94 (Appendix A).

North of the ACS site in Area D, VOCs were detected in samples GP104 through GP108, GP112, GP114, GP139 and GP140 (Table 2). The highest VOC concentrations were detected in samples GP105 and GP107, where total VOCs were 327 ug/L and 6,213 ug/L, respectively (Table 2). These samples contained several VOC constituents, including acetone, benzene, 1,1-DCA, cis-1,2-DCE, and MIBK above the quantitation limit. The distribution of benzene and acetone in the north perimeter area is presented in Figures 3 and 4, respectively. Benzene was detected only in GP105, GP106 and GP107, whereas acetone was detected in samples collected throughout the area (Figure 4). In samples GP139 and GP140, acetone was the only compound detected in the groundwater samples.

Conclusions

The extent of impacted groundwater has been defined along the east perimeter of the ACS site by the Upper Aquifer Investigation. The absence of VOC detections in samples GP95 through GP101 indicates that VOCs have not migrated beyond 300 feet east of Colfax Road. This is consistent with both the results of previous investigations and the upper aquifer groundwater flow system in the area (Objective #1). Groundwater flow in a northerly direction on the east perimeter of the ACS site appears to provide a hydraulic barrier to eastward migration of VOCs (Figure 1).

The extent of benzene contamination north of the ACS site is defined by groundwater samples from locations GP108, GP139 to GP140, GP113 and GP104 (Figure 3). With exceptions of the detection of acetone in several samples and MIBK detected in GP108, the extent of the benzene plume also corresponds to the outer limits of VOC contamination (Objective #2). The extent of acetone detections was not defined to a "zero" line north of samples GP139 and GP140 in the perimeter area. The low level detections of acetone appear to decrease to the north onto LaSalle Steel property. (Monitoring wells planned for this area will provide further data for the final clarification of the acetone anomaly.)

RECOMMENDATIONS

Based on the results and conclusions of the Upper Aquifer Investigation, the overall objective of the investigation, to delineate the extent of upper aquifer contamination sufficiently to locate the placement of additional monitoring wells, has been satisfied around the site.

The following actions are proposed to complete the delineation of upper aquifer VOC contamination.

- Area A -** The extent of VOC contamination has been defined by a series of closely spaced (100 foot) sampling locations. The sampling showed a clear delineation between the zones of contamination and non-contamination. VOC contamination does not extend westward, beyond the edge of the wetland. Because of the clear delineation of VOC contamination, and the difficulties inherent in constructing monitoring wells within the wetlands, no additional monitoring wells are proposed at this location.
- Area B -** Four monitoring wells are proposed to supplement existing well MW-19 in defining the limits of VOC contamination in this area. The preliminary locations of the four wells, labeled A, B, C, and D, are shown on Figure 5. The wells will be installed in close proximity to the location where shallow groundwater samples were collected at GP135, GP159, GP151 and GP155. These locations have been selected to surround the VOC plume and provide an indication of whether the extent of contamination is remaining constant or expanding. Final locations will be selected in the field, based on accessibility, with concurrence from the U.S. EPA, its field oversight subcontractor and IDEM.
- Area C -** No monitoring wells are proposed for the southwest side of the landfill. Acetone was the only VOC sporadically detected in this area at concentrations less than 31 ug/L. Detections of acetone at these concentrations can be attributed to either field GC contamination or naturally occurring anaerobic degradation processes. Two existing monitoring wells located in Area C (MW01, MW15; Figure 1) will continue to serve as sentinel wells for monitoring potential contaminant migration southwest of the landfill area.
- Area D -** Two additional monitoring wells screened in the upper aquifer are proposed along the north side of the site. The locations, labeled E and F on Figure 5, have been selected to represent presently non-contaminated groundwater. These new wells will act as sentinel wells, providing an indication whether the extent of contamination is remaining constant or expanding. Final locations will be selected in the field, based on accessibility, with concurrence from the U.S. EPA, its field oversight subcontractor and IDEM.

The Upper Aquifer Investigation confirms that VOC contamination has not extended significantly off site to the east of Colfax Avenue, and north of Reder Road. Therefore, no additional monitoring wells are proposed in this area.

RESIDENTIAL WELL IDENTIFICATION AND SAMPLING

Due to the dimensions of the VOC plume east of Colfax and south of Reder Road, locations of residential wells in this area were identified which may be potentially susceptible to VOC migration from the upper aquifer to the lower aquifer (lower aquifer is the formation in which the residential wells are screened). Four residential wells have been identified in the area and are listed below:

Merchants National Bank (currently rented by Georgia Gibson)
1002 Reder Road

Kazimierz Rybacki
430 East Avenue H

Gerald Cottingham
940 Arbogast

Mark Jansen
950 Arbogast

The locations of the properties are shown on Figure 5. It is recommended that water samples be collected from these four residential to coincide with the collection of groundwater samples from the new monitoring wells proposed in this Technical Memorandum. Well logs for the residential wells will be made available prior to sampling. A schedule for installing and sampling the new upper aquifer monitoring and for sampling the residential wells will be prepared and submitted to the Agencies ten days after this Upper Aquifer Investigation report is approved.

SURFACE WATER SAMPLE

One surface water sample was collected near P61, north of the ACS facility (Figure 2). The sample was taken from standing surface water adjacent to a ditch that flows beneath the railroad tracks from properties north of the site (i.e., LaSalle Steel) towards the wetland area (Area A). The water sample was analyzed with the field GC and found to contain benzene at 1100 ug/L. No other VOCs were detected in the water sample.

Attachments:

- Table 1. Summary of Sampling Coordinates and Depths
- Table 2. Tabulation of Selected VOC Detections
- Table 3. Comparison of Shallow and Deep Groundwater Samples in the Upper Aquifer

- Figure 1. Upper Aquifer Sampling Areas
- Figure 2. Plot of Upper Aquifer Sampling Locations
- Figure 3. Upper Aquifer Plot of Benzene Detections (ppb)
- Figure 4. Upper Aquifer Plot of Acetone Detections (ppb)
- Figure 5. Location of Proposed Monitoring Wells and Residential Well Sampling

- Appendix A. Tabulation of VOC Analyses with Field GC
- Appendix B. Copies of Field GC Printouts and Plots (available upon request)

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Table 1. Summary of Sample Coordinates and Depths
ACS NPL Site

| Probe No. | East feet | North feet | Approx. G.W. Level feet | Approx. Sample Depth feet |
|------------------|----------------------|-----------------------|--|--|
| GP50 | 4756.5 | 7309.0 | 3.0 | 8.0 |
| GP-50A | 4756.5 | 7309.0 | 3.0 | 12.0 |
| GP51 | 4568.2 | 7240.7 | 1.5 | 6.5 |
| GP-51A | 4568.2 | 7240.7 | 1.5 | 8.5 |
| GP52 | 4813.6 | 7857.5 | 0.5 | 5.5 |
| GP52A | 4687.4 | 7519.2 | 0.5 | 10.5 |
| GP53 | 5042.0 | 7618.2 | 1.5 | 6.5 |
| GP55 | 5026.8 | 7451.6 | 1.0 | 6.0 |
| GP56 | 4994.1 | 7750.3 | 1.0 | 6.0 |
| GP57 | 4938.8 | 7658.5 | 1.5 | 6.5 |
| GP57A | 4938.8 | 7658.5 | 1.5 | 11.5 |
| GP58 | 4829.8 | 7705.0 | 1.0 | 6.0 |
| GP59 | 4751.7 | 7615.9 | 1.0 | 6.0 |
| GP60 | 4830.7 | 7537.2 | 1.5 | 6.5 |
| GP61 | 4741.4 | 7752.7 | 1.0 | 6.0 |
| GP62 | 4687.4 | 7519.2 | 1.5 | 6.5 |
| GP63 | 4855.1 | 7259.5 | 1.5 | 6.5 |
| GP64 | 4798.0 | 7166.3 | 1.0 | 6.0 |
| GP65 | 4763.6 | 7087.3 | 1.0 | 6.0 |
| GP66 | 4716.0 | 7632.5 | 1.0 | 6.0 |
| GP66A | 4716.0 | 7632.5 | 1.0 | 11.0 |
| GP67 | 4723.3 | 7432.8 | 1.0 | 6.0 |
| GP68 | 4731.6 | 7032.7 | 2.5 | 7.5 |
| GP68A | 4731.6 | 7032.7 | 2.5 | 12.5 |
| GP69 | 4747.1 | 7168.2 | 2.0 | 7.0 |
| GP70 | 4616.5 | 7064.6 | 1.5 | 6.5 |
| GP70A | 4616.5 | 7064.6 | 0.0 | 10.0 |
| GP71 | 4628.8 | 7420.4 | 0.5 | 5.5 |
| GP71A | 4628.8 | 7420.4 | 0.0 | 10.0 |
| GP72 | 5472.9 | 5563.3 | ns | ns |
| GP73 | 4797.3 | 4726.1 | 5.0 | 11.0 |
| GP74 | 4698.9 | 4904.4 | 4.5 | 11.0 |
| GP75 | 4606.8 | 5082.5 | 5.5 | 11.0 |

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ACS NPL Site

| Probe No. | East feet | North feet | Approx. G.W. Level feet | Approx. Sample Depth feet |
|------------------|----------------------|-----------------------|--|--|
| GP76 | 4509.4 | 5257.8 | 5.0 | 10.0 |
| GP77 | 4395.7 | 5420.9 | 4.5 | 10.5 |
| GP78 | 4305.3 | 5619.1 | 5.0 | 10.0 |
| GP79 | 4212.7 | 5795.8 | 5.0 | 10.0 |
| GP80 | 5472.9 | 5563.3 | 19.0 | 24.0 |
| GP81 | 5622.8 | 5547.8 | 15.0 | 20.0 |
| GP82 | 5621.1 | 5352.5 | 9.0 | 14.0 |
| GP83 | 5822.3 | 5356.9 | 9.0 | 14.0 |
| GP84 | 5797.9 | 5171.7 | 9.0 | 14.0 |
| GP85 | 5806.4 | 4972.5 | 5.0 | 10.0 |
| GP86 | 5976.4 | 5043.0 | 6.0 | 11.0 |
| GP87 | 5111.6 | 5523.4 | 10.0 | 15.0 |
| GP88 | 5160.6 | 5368.9 | 13.0 | 18.0 |
| GP89 | 5118.5 | 5565.8 | 21.0 | 26.0 |
| GP90 | 5538.8 | 5705.9 | 19.0 | 24.0 |
| GP91 | 5610.7 | 5891.5 | 17.0 | 21.0 |
| GP92 | 5725.9 | 6086.7 | 13.0 | 18.0 |
| GP93 | 5802.3 | 6267.1 | 11.0 | 16.0 |
| GP94 | 6149.4 | 6280.2 | 10.0 | 15.0 |
| GP95 | 6230.7 | 6472.2 | 4.0 | 9.0 |
| GP96 | 6298.7 | 6648.4 | 4.0 | 9.0 |
| GP97 | 6295.1 | 6832.1 | 4.0 | 9.0 |
| GP98 | 6350.2 | 7046.3 | 4.0 | 9.0 |
| GP99 | 6410.4 | 7280.7 | 6.0 | 11.0 |
| GP100 | 6405.0 | 7678.9 | 6.0 | 11.0 |
| GP101 | 5944.6 | 5706.5 | 10.0 | 15.0 |
| GP102 | 5994.6 | 5905.4 | 10.0 | 15.0 |
| GP103 | 6062.3 | 6086.4 | 3.0 | 8.0 |
| GP104 | 6217.2 | 7736.6 | 3.0 | 8.0 |
| GP105 | 6002.5 | 7753.3 | 4.0 | 9.0 |
| GP106 | 5818.0 | 7827.9 | 3.0 | 8.0 |
| GP107 | 5581.7 | 7906.7 | 2.0 | 7.0 |
| GP108 | 5398.0 | 7984.1 | 2.0 | 7.0 |
| GP109 | 5195.9 | 7973.0 | 3.0 | 8.0 |

Table 1. Summary of Sample Coordinates and Depths
ACS NPL Site

| Probe No. | East feet | North feet | Approx. G.W. Level feet | Approx. Sample Depth feet |
|------------------|----------------------|-----------------------|--|--|
| GP110 | 4949.6 | 8072.4 | 4.0 | 9.0 |
| GP111 | 6368.8 | 7845.2 | 5.0 | 10.0 |
| GP112 | 6138.2 | 7961.0 | 3.0 | 8.0 |
| GP113 | 5985.9 | 7954.8 | 4.0 | 9.0 |
| GP114 | 5794.2 | 8025.5 | 4.0 | 9.0 |
| GP115 | 4592.5 | 6905.3 | 6.0 | 11.0 |
| GP116 | 5651.9 | 4835.4 | 5.0 | 10.0 |
| GP117 | 5435.5 | 4793.5 | 2.0 | 7.0 |
| GP118 | 5084.4 | 4798.9 | 4.0 | 9.0 |
| GP119 | 5777.1 | 4741.2 | 5.0 | 9.0 |
| GP120 | 5594.5 | 4625.2 | 1.5 | 6.5 |
| GP121 | 5393.1 | 5512.7 | 21.0 | 26.0 |
| GP122 | 5305.8 | 5361.2 | 15.0 | 20.0 |
| GP123 | 5114.8 | 5612.9 | 21.0 | 26.0 |
| GP124 | 5231.1 | 5606.3 | 22.0 | 27.0 |
| GP125 | 6234.4 | 7399.7 | 10.0 | 15.0 |
| GP126 | 5889.3 | 4782.9 | 3.0 | 8.0 |
| GP127 | 5816.6 | 4591.6 | 4.0 | 9.0 |
| GP128 | 5587.7 | 4518.1 | 3.0 | 8.0 |
| GP129 | 5392.9 | 4629.7 | 3.0 | 8.0 |
| GP130 | 5275.9 | 4790.1 | 4.0 | 9.0 |
| GP131 | 6088.4 | 4830.5 | ns | ns |
| GP132 | 6056.7 | 4630.5 | 4.0 | 9.0 |
| GP133 | 5929.2 | 4450.4 | 5.0 | 10.0 |
| GP134 | 5737.9 | 4367.5 | 4.0 | 9.0 |
| GP135 | 5489.0 | 4348.2 | 7.0 | 12.0 |
| GP136 | 5398.1 | 4501.4 | 3.0 | 8.0 |
| GP137 | 6252.8 | 8061.6 | 4.5 | 9.5 |
| GP138 | 6039.3 | 8131.7 | 3.0 | 8.0 |
| GP139 | 5877.2 | 8195.5 | 4.0 | 9.0 |
| GP140 | 5650.8 | 8208.5 | 5.0 | 10.0 |
| GP141 | 5458.5 | 8139.6 | 4.0 | 9.0 |
| GP142 | 5229.5 | 8092.5 | 6.0 | 11.0 |
| GP143 | 5923.7 | 4120.5 | 5.0 | 10.0 |

Table 1. Summary of Sample Coordinates and Depths
ACS NPL Site

| Probe No. | East feet | North feet | Approx. G.W. Level feet | Approx. Sample Depth feet |
|------------------|----------------------|-----------------------|--|--|
| GP144 | 5735.3 | 4126.4 | 4.0 | 9.0 |
| GP145 | 5545.9 | 4217.0 | 5.0 | 12.0 |
| GP146 | 5728.0 | 3713.4 | 4.0 | 9.0 |
| GP147 | 5737.9 | 3303.0 | ns | ns |
| GP148 | 4571.6 | 4681.2 | 9.0 | 14.0 |
| GP149 | 4495.9 | 4858.4 | 6.0 | 11.0 |
| GP150 | 4971.8 | 4804.2 | 4.0 | 9.0 |
| GP151 | 6125.5 | 4434.9 | 4.0 | 9.0 |
| GP152 | 6186.9 | 4209.7 | 4.0 | 9.0 |
| GP153 | 5616.1 | 4023.2 | 1.0 | 6.0 |
| GP154 | 5696.9 | 3863.9 | 2.0 | 7.0 |
| GP155 | 5907.7 | 3879.7 | 2.5 | 7.5 |
| GP156 | 6077.8 | 4003.6 | 2.0 | 7.0 |
| GP157 | 5511.0 | 3980.2 | 1.0 | 6.0 |
| GP158 | 6296.3 | 3994.5 | 3.0 | 8.0 |
| GP159 | 6147.1 | 3809.8 | 2.0 | 7.0 |
| GP160 | 5511.0 | 3877.1 | 1.0 | 6.0 |
| GP161 | 5413.9 | 4054.1 | 0.5 | 5.5 |

notes:

1. ns - no sample collected
2. No sample collected from GP72. Sample obtained from same location later and renamed GP80.

Table 2. Tabulation of Selected VOC Detections
Upper Aquifer Investigation, ACS NPL Site

| Probe Number | Coordinates | | Acetone (ug/L) | Benzene (ug/L) | BETX (ug/L) | Total VOCs (ppm) |
|-----------------|-------------|----------|-------------------|-------------------|----------------|------------------------|
| | Easting | Northing | | | | |
| GP50 | 4756.5 | 7309.0 | 19 | nd | nd | 0.019 |
| GP51 | 4568.2 | 7240.7 | nd | nd | nd | nd |
| GP52 | 4813.6 | 7857.5 | nd | nd | nd | nd |
| GP53 | 5042.0 | 7618.2 | 210 | 550 | 573 | 0.81 |
| GP55 | 5026.8 | 7451.6 | 15 | 400 | 400 | 0.42 |
| GP56 | 4994.1 | 7750.3 | 6700 | nd | nd | 6.7 |
| GP57 | 4938.8 | 7658.5 | 770 | 5000 | 5000 | 5.7 |
| GP58 | 4829.8 | 7705.0 | 50600 | nd | nd | 50.6 |
| GP59 | 4751.7 | 7615.9 | 11 | nd | nd | 0.011 |
| GP60 | 4830.7 | 7537.2 | 3560 | nd | nd | 3.56 |
| GP61 | 4741.4 | 7752.7 | nd | nd | nd | nd |
| GP62 | 4687.4 | 7519.2 | nd | nd | nd | nd |
| GP63 | 4855.1 | 7259.5 | nd | nd | nd | nd |
| GP64 | 4798.0 | 7166.3 | 12 | nd | nd | 0.012 |
| GP65 | 4763.6 | 7087.3 | nd | nd | nd | nd |
| GP66 | 4716.0 | 7632.5 | nd | nd | nd | nd |
| GP67 | 4723.3 | 7432.8 | 715 | nd | nd | 0.715 |
| GP68 | 4731.6 | 7032.7 | 17 | nd | nd | 0.017 |
| GP69 | 4747.1 | 7168.2 | nd | nd | nd | nd |
| GP70 | 4616.5 | 7064.6 | nd | nd | nd | nd |
| GP71 | 4628.8 | 7420.4 | nd | nd | nd | nd |
| GP72 | 5474.1 | 5558.7 | ns | ns | ns | ns |
| GP73 | 4797.3 | 4726.1 | 34 | nd | nd | 0.034 |
| GP74 | 4698.9 | 4904.4 | 57 | nd | nd | 0.057 |
| GP75 | 4606.8 | 5082.5 | nd | nd | nd | nd |
| GP76 | 4509.4 | 5257.8 | nd | nd | nd | nd |
| GP77 | 4395.7 | 5420.9 | nd | nd | nd | nd |
| GP78 | 4305.3 | 5619.1 | 31.1 | nd | nd | 0.031 |
| GP79 | 4212.7 | 5795.8 | nd | nd | nd | nd |
| GP80 | 5472.9 | 5563.3 | nd | 7860 | 22803 | 23.1 |
| GP81 | 5622.8 | 5547.8 | 1720 | nd | 13868 | 18.80 |
| GP82 | 5621.1 | 5352.5 | 4450 | 3430 | 21550 | 29.5 |
| GP83 | 5822.3 | 5356.9 | nd | nd | 16.7 | 0.0167 |
| GP84 | 5797.9 | 5171.7 | nd | nd | nd | nd |
| GP85 | 5806.4 | 4972.5 | nd | nd | nd | nd |
| GP86 | 5976.4 | 5043.0 | nd | nd | nd | nd |
| GP87 | 5111.6 | 5523.4 | 3900 | 410 | 660 | 4.6 |
| GP88 | 5160.6 | 5368.9 | 159 | nd | nd | 0.16 |
| GP89 | 5118.5 | 5565.8 | 2910 | 1060 | 6560 | 9.5 |
| GP90 | 5538.8 | 5705.9 | 3960 | 8260 | 52720 | 93 |
| GP91 | 5610.7 | 5891.5 | nd | nd | 6.1 | 0.016 |

Table 2. Tabulation of Selected VOC Detections
Upper Aquifer Investigation, ACS NPL Site

| Probe Number | Coordinates | | Acetone (ug/L) | Benzene (ug/L) | BETX (ug/L) | Total VOCs (ppm) |
|--------------|-------------|----------|----------------|----------------|-------------|------------------|
| | Easting | Northing | | | | |
| GP92 | 5725.9 | 6086.7 | 81.5 | nd | nd | 0.082 |
| GP93 | 5802.3 | 6267.1 | 42.7 | 5 | 5 | 0.053 |
| GP94 | 6149.4 | 6280.2 | nd | nd | nd | 0.01 |
| GP95 | 6230.7 | 6472.2 | nd | nd | nd | nd |
| GP96 | 6298.7 | 6648.4 | nd | nd | nd | nd |
| GP97 | 6295.1 | 6832.1 | nd | nd | nd | nd |
| GP98 | 6350.2 | 7046.3 | nd | nd | nd | nd |
| GP99 | 6410.4 | 7280.7 | nd | nd | nd | nd |
| GP100 | 6405.0 | 7678.9 | nd | nd | nd | nd |
| GP101 | 5944.6 | 5706.5 | nd | nd | nd | nd |
| GP102 | 5994.6 | 5905.4 | nd | nd | nd | nd |
| GP103 | 6062.3 | 6086.4 | nd | nd | nd | nd |
| GP104 | 6217.2 | 7736.6 | 47.9 | nd | nd | 0.048 |
| GP105 | 6002.5 | 7753.3 | 205 | 52.5 | 52.5 | 0.33 |
| GP106 | 5818.0 | 7827.9 | 37.5 | 118 | 118 | 0.16 |
| GP107 | 5581.7 | 7906.7 | 860 | 5320 | 5320 | 6.2 |
| GP108 | 5398.0 | 7984.1 | nd | nd | nd | 0.0061 |
| GP109 | 5195.9 | 7973.0 | nd | nd | nd | nd |
| GP110 | 4949.6 | 8072.4 | nd | nd | nd | nd |
| GP111 | 6368.8 | 7845.2 | nd | nd | nd | nd |
| GP112 | 6138.2 | 7961.0 | 172 | nd | nd | 0.17 |
| GP113 | 5985.9 | 7954.8 | nd | nd | nd | nd |
| GP114 | 5794.2 | 8025.5 | 53.3 | nd | nd | 0.053 |
| GP115 | 4592.5 | 6905.3 | nd | nd | nd | nd |
| GP116 | 5651.9 | 4835.4 | 240 | 710 | 5926 | 6.2 |
| GP117 | 5435.5 | 4793.5 | 175 | nd | nd | 0.18 |
| GP118 | 5084.4 | 4798.9 | nd | nd | nd | nd |
| GP119 | 5777.1 | 4741.2 | 16.6 | 5.2 | 5.2 | 0.03 |
| GP120 | 5594.5 | 4625.2 | 719 | 131 | 376 | 1.1 |
| GP121 | 5393.1 | 5512.7 | 4780 | 4580 | 11840 | 17 |
| GP122 | 5305.8 | 5361.2 | 834 | nd | nd | 0.83 |
| GP123 | 5114.8 | 5612.9 | 6000 | 1590 | 3680 | 19 |
| GP124 | 5231.1 | 5606.3 | 3810 | 6950 | 6950 | 11 |
| GP125 | 6234.4 | 7399.7 | nd | nd | nd | nd |
| GP126 | 5889.3 | 4782.9 | 51.4 | nd | nd | 0.067 |
| GP127 | 5816.6 | 4591.6 | 13.4 | nd | nd | 0.019 |
| GP128 | 5587.7 | 4518.1 | nd | 506 | 5376 | 5.4 |
| GP129 | 5392.9 | 4629.7 | nd | nd | nd | nd |
| GP130 | 5275.9 | 4790.1 | 168 | nd | nd | 0.17 |
| GP131 | 6088.4 | 4830.5 | ns | ns | ns | ns |
| GP132 | 6056.7 | 4630.5 | nd | nd | nd | nd |
| GP133 | 5929.2 | 4450.4 | 61.6 | 5.1 | 5.1 | 0.067 |

Table 2. Tabulation of Selected VOC Detections
Upper Aquifer Investigation, ACS NPL Site

| Probe Number | Coordinates | | Acetone (ug/L) | Benzene (ug/L) | BETX (ug/L) | Total VOCs (ppm) |
|-----------------|-------------|----------|-------------------|-------------------|----------------|------------------------|
| | Easting | Northing | | | | |
| GP134 | 5737.9 | 4367.5 | 412 | 1100 | 1132.6 | 1.63 |
| GP135 | 5489.0 | 4348.2 | nd | nd | nd | nd |
| GP136 | 5398.1 | 4501.4 | 19.2 | 5.3 | 5.3 | 0.0245 |
| GP137 | 6252.8 | 8061.6 | nd | nd | nd | nd |
| GP138 | 6039.3 | 8131.7 | nd | nd | nd | nd |
| GP139 | 5877.2 | 8195.5 | 50.2 | nd | nd | 0.05 |
| GP140 | 5650.8 | 8208.5 | 21.3 | nd | nd | 0.021 |
| GP141 | 5458.5 | 8139.6 | nd | nd | nd | nd |
| GP142 | 5229.5 | 8092.5 | nd | nd | nd | nd |
| GP143 | 5923.7 | 4120.5 | 58.5 | 252 | 357 | 0.416 |
| GP144 | 5735.3 | 4126.4 | nd | 172 | 172 | 0.172 |
| GP145 | 5545.9 | 4217.0 | nd | nd | nd | nd |
| GP146 | 5728.0 | 3713.4 | nd | nd | nd | nd |
| GP147 | 5737.9 | 3303.0 | ns | ns | ns | ns |
| GP148 | 4571.6 | 4681.2 | nd | nd | nd | nd |
| GP149 | 4495.9 | 4858.4 | nd | nd | nd | nd |
| GP150 | 4971.8 | 4804.2 | nd | nd | nd | nd |
| GP151 | 6125.5 | 4434.9 | nd | nd | nd | nd |
| GP152 | 6186.9 | 4209.7 | nd | nd | nd | nd |
| GP153 | 5616.1 | 4023.2 | 15 | nd | nd | 0.015 |
| GP154 | 5696.9 | 3863.9 | nd | nd | nd | nd |
| GP155 | 5907.7 | 3879.7 | nd | nd | nd | nd |
| GP156 | 6077.8 | 4003.6 | 34 | 38.8 | 38.8 | 0.073 |
| GP157 | 5511.0 | 3980.2 | 38 | nd | nd | 0.038 |
| GP158 | 6296.3 | 3994.5 | nd | nd | nd | nd |
| GP159 | 6147.1 | 3809.8 | nd | nd | nd | nd |
| GP160 | 5511.0 | 3877.1 | nd | nd | nd | nd |
| GP161 | 5413.9 | 4054.1 | nd | nd | nd | nd |

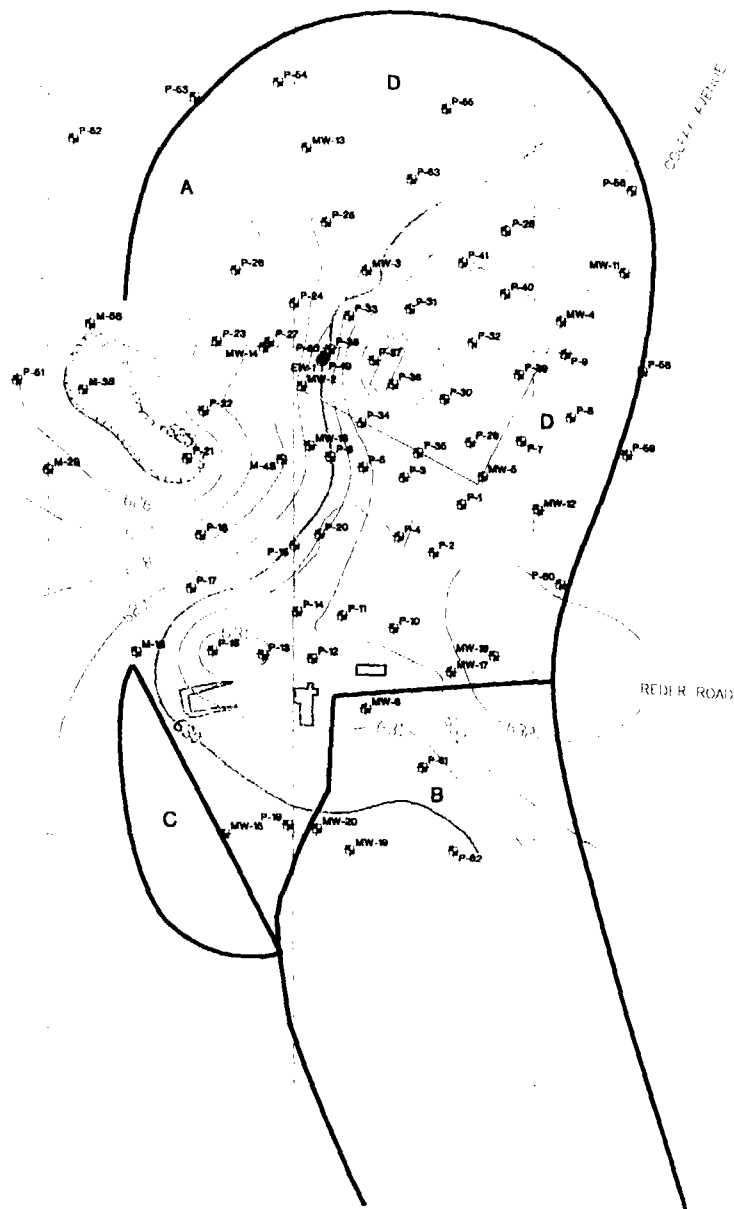
notes:

1. nd - not detected
2. ns - no sample collected
3. total VOCs - sum total of target VOCs (Appendix A)

Table 3. Comparison of Shallow and Deep Groundwater Samples in Upper Aquifer
ACS NPL Site

| <u>Probe No.</u> | <u>Approx. Sample Depth (ft)</u> | <u>Concentration (ug/L)</u> | |
|------------------|--------------------------------------|-----------------------------|----------------|
| | | <u>Benzene</u> | <u>Acetone</u> |
| GP-50 | 8.0 | nd | 19 |
| GP-50A | 12.0 | nd | 44 |
| GP-51 | 6.5 | nd | nd |
| GP-51A | 8.5 | nd | nd |
| GP-52 | 5.5 | nd | nd |
| GP-52A | 10.5 | nd | nd |
| GP-57 | 6.5 | 5,000 | 770 |
| GP-57A | 11.5 | 44,700 | 1,400 |
| GP-66 | 6.0 | nd | nd |
| GP-66A | 11.0 | nd | nd |
| GP-68 | 7.5 | nd | 17 |
| GP-68A | 12.5 | nd | 348 |
| GP-70 | 6.5 | nd | nd |
| GP-70A | 10.0 | nd | nd |
| GP-71 | 5.5 | nd | nd |
| GP-71A | 10.0 | nd | nd |

Note: "A" designation indicates deep groundwater sample (i.e., 10 foot depth).

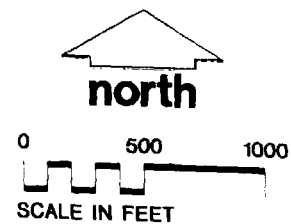


LEGEND

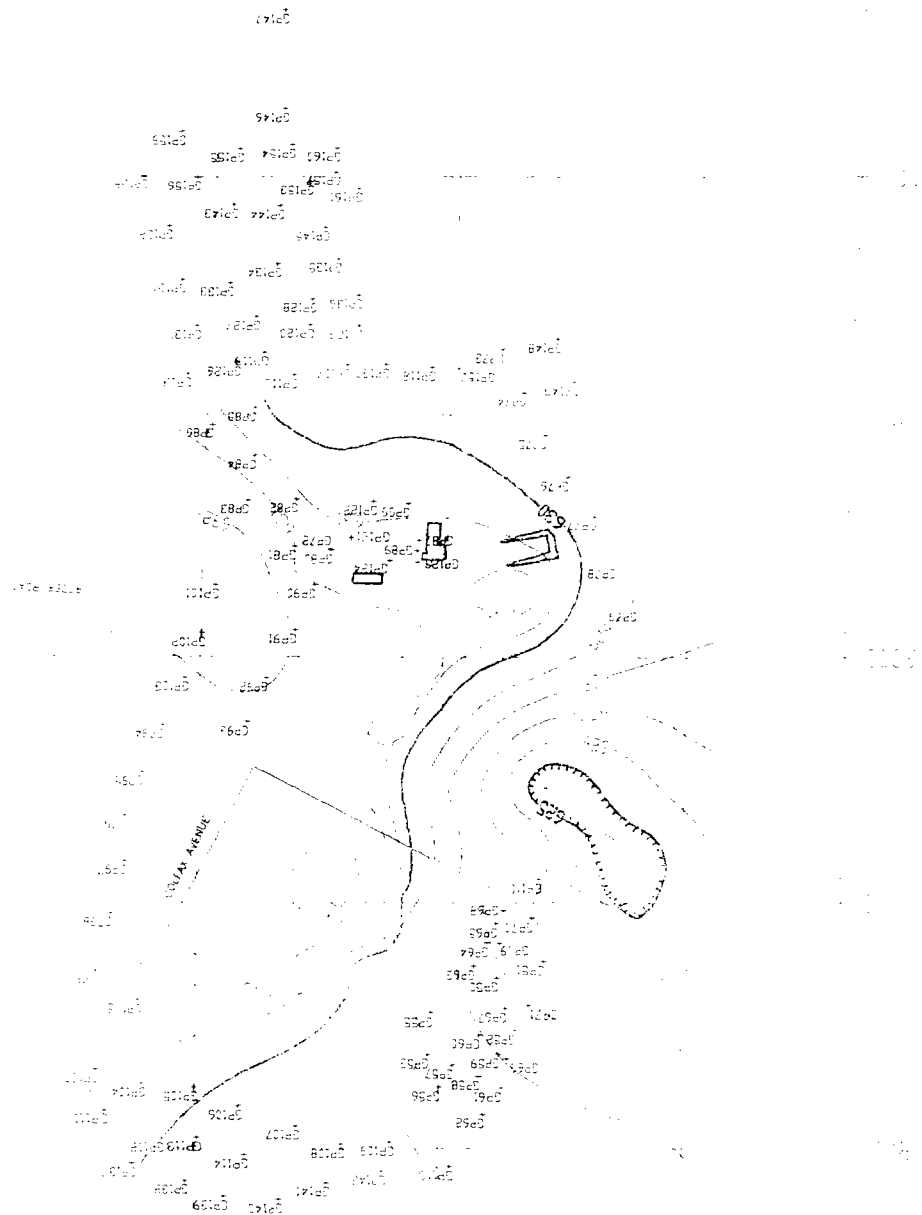
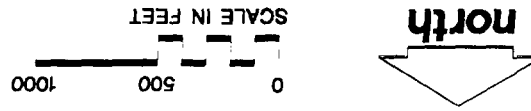
- A** LOCATION OF INVESTIGATION AREAS SEE TEXT FOR FURTHER DESCRIPTION
- MW-12** UPPER AQUIFER WELL LOCATION AND NUMBER
- M-18** LEACHATE/UPPER AQUIFER WELL LOCATION AND NUMBER
- P-81** PIEZOMETER LOCATION AND NUMBER
- 60** GROUNDWATER ELEVATION CONTOUR

LEGEND

- 1. GROUNDWATER ELEVATION WAS MEASURED AT THE SITE ON OCTOBER 30, 1995.

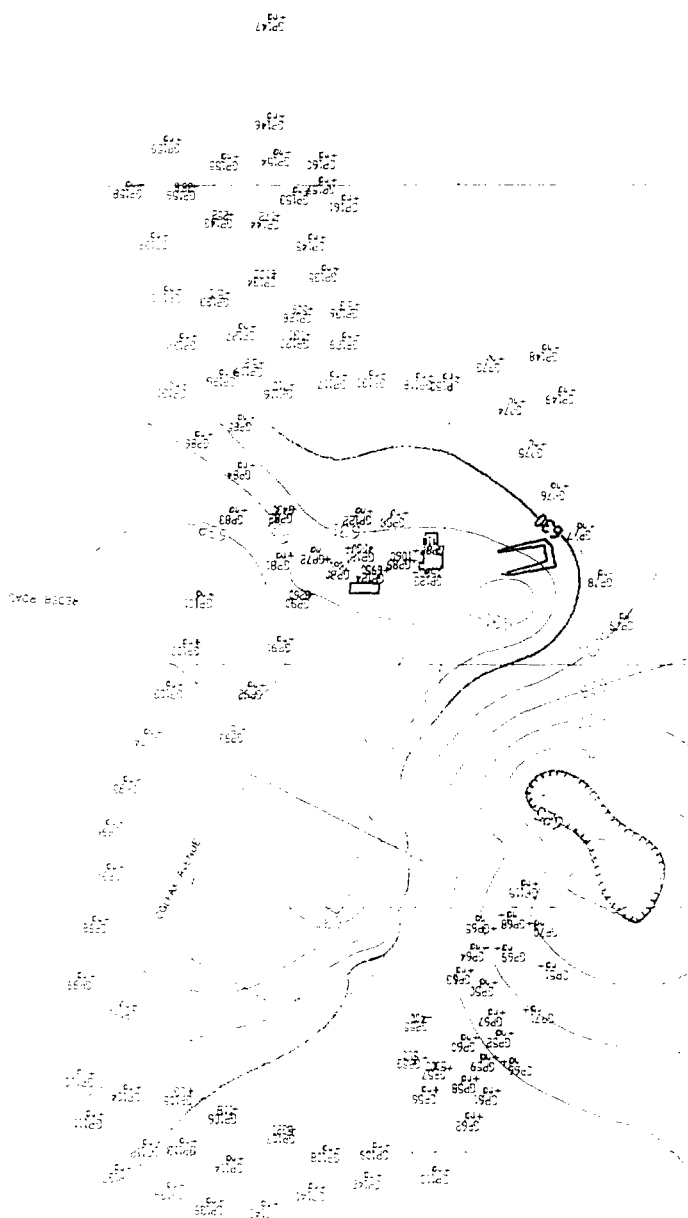


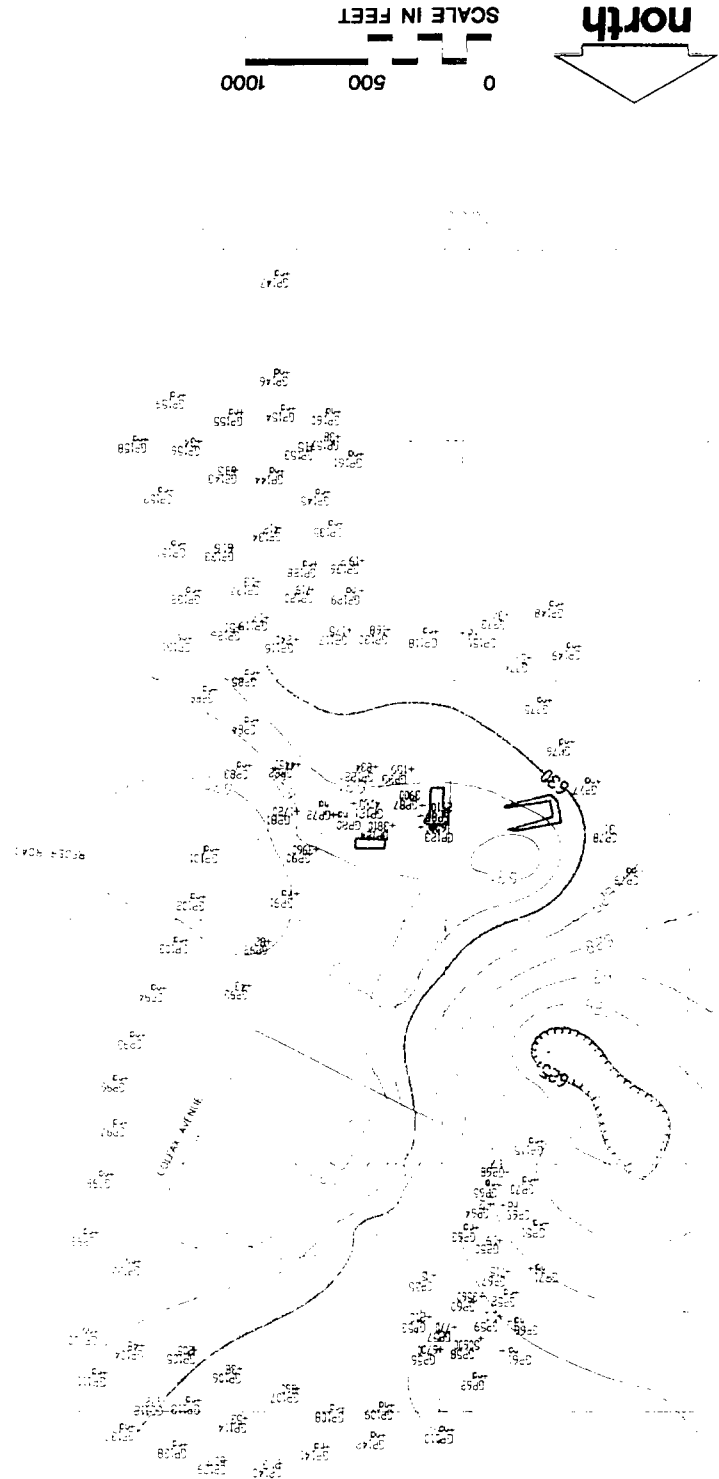
UPPER AQUIFER SAMPLING AREAS

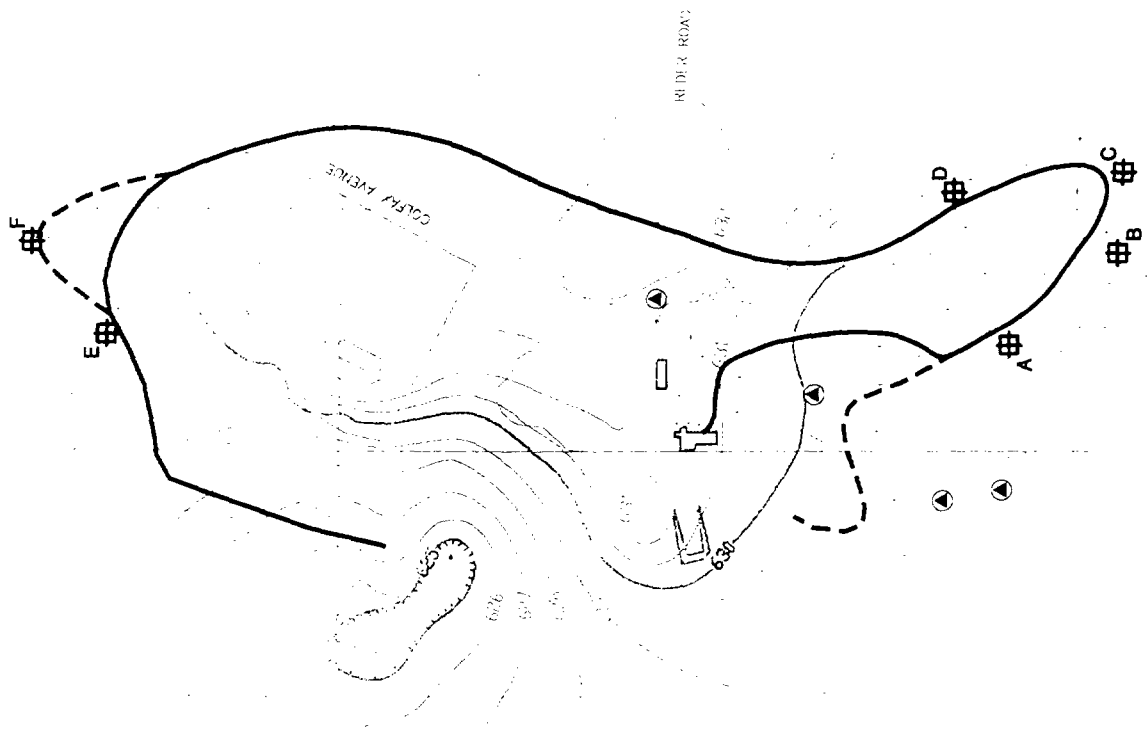


UPPER AQUIFER PLOT OF
BENZENE DETECTIONS (ppb)

SCALE IN FEET
0 500 1000

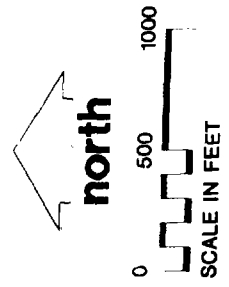






LEGEND

- PROPOSED UPPER ADULTER MONITORING WELLS
- PROPOSED RESIDENTIAL WELL SAMPLES
- BENZENE CONCENTRATIONS LESS THAN 5 ppb
- ACETONE CONCENTRATIONS LESS THAN 50 ppb



LOCATION OF PROPOSED MONITORING WELLS AND RESIDENTIAL WELL SAMPLING



A



| chk'd to 3/14/96 | GP50 | GP50A | GP51 | GP51A | GPFB01 1/24/96 | GPTB01 1/24/96 | GP52 | GP53 | GP55 | GP56 |
|-----------------------------|-------|-------|------|-------|-------------------|-------------------|------|-------|------|------|
| Compound - Field GC | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Acetone | 19 | 44 | | | | | | 210 | 15 | 6700 |
| 1,1 Dichloroethene | | | | | | | | | | |
| trans 1,2 Dichloroethene | | | | | | | | 23 | 5 | |
| 1,1 Dichloroethane | | | | | | | | | | |
| 2-Butanone (MEK) | | | | | | | | | | |
| cis 1,2 Dichloroethene | | | | | | | | 7 | | |
| 1,2 Dichloroethane | | | | | | | | | | |
| 1,1,1 Trichloroethane | | | | | | | | | | |
| Benzene | | | | | | | | 550 | 400 | |
| Carbon tetrachloride | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | | | | | | | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | |
| Toluene | | | | | | | | 23 | | |
| Tetrachloroethene | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | | |
| Ethylbenzene | | | | | | | | | | |
| m+p Xylene | | | | | | | | | | |
| Styrene | | | | | | | | | | |
| o Xylene | | | | | | | | | | |
| TOTAL VOCs (PPM) | 0.019 | 0.044 | 0 | 0 | 0 | 0 | 0 | 0.813 | 0.42 | 6.7 |

| chk'd to 3/14/96 | GP57 | GP58 | GP59 | GP60 | GP61 | GP62 | GP63 | GP64 | GP65 | GPTB02 1/25/95 |
|-----------------------------|------|-------|-------|-------|------|------|------|-------|------|-------------------|
| Compound - Field GC | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Acetone | 770 | 50600 | 11 | 3560* | | | | 12 | | |
| 1,1 Dichloroethene | | | | | | | | | | |
| trans 1,2 Dichloroethene | | | | | | | | | | |
| 1,1 Dichloroethane | | | | | | | | | | |
| 2-Butanone (MEK) | | | | | | | | | | |
| cis 1,2 Dichloroethene | | | | | | | | | | |
| 1,2 Dichloroethane | | | | | | | | | | |
| 1,1,1 Trichloroethane | | | | | | | | | | |
| Benzene | 5000 | | | | | | | | | |
| Carbon tetrachloride | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | | | | | | | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | |
| Toluene | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | | |
| Ethylbenzene | | | | | | | | | | |
| m+p Xylene | | | | | | | | | | |
| Styrene | | | | | | | | | | |
| o Xylene | | | | | | | | | | |
| TOTAL VOCs (PPM) | 5.77 | 50.6 | 0.011 | 0 | 0 | 0 | 0 | 0.012 | 0 | |

| chk'd to 3/14/96 | GPFB02 1/25/96 | GP66 | GP67 | GP68 | GP68 Dup | GP69 | GP70 | GP71 | | GP73 |
|-----------------------------|-------------------|-------|-------|--------|----------|-------|-------|-------|-------|-------|
| Compound - Field GC | ug/L. | ug/L. | ug/L. | ug/L. | ug/L. | ug/L. | ug/L. | ug/L. | ug/L. | ug/L. |
| Acetone | | | 715 | 17 | 21 | | | | | 34 |
| 1,1 Dichloroethene | | | | | | | | | | |
| trans 1,2 Dichloroethene | | | | | | | | | | |
| 1,1 Dichloroethane | | | | | | | | | | |
| 2-Butanone (MEK) | | | | | | | | | | |
| cis 1,2 Dichloroethene | | | | | | | | | | |
| 1,2 Dichloroethane | | | | | | | | | | |
| 1,1,1 Trichloroethane | | | | | | | | | | |
| Benzene | | | | | | | | | | |
| Carbon tetrachloride | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | | | | | | | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | |
| Toluene | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | | |
| Ethylbenzene | | | | | | | | | | |
| m+p Xylene | | | | | | | | | | |
| Styrene | | | | | | | | | | |
| o Xylene | | | | | | | | | | |
| TOTAL VOCs (PPM) | | 0 | 0.715 | 0.0169 | | 0 | 0 | 0 | 0 | 0.034 |

| chk'd to 3/14/96 | GP74 | GP-1/26/96 TB | GP-1/29/96 FB | GP75 | GP76 | GP77 | GP78 | GP-1/31/96-FB | GP79 | GP80 | GP81 |
|-----------------------------|--------|------------------|------------------|------|------|------|--------|---------------|------|-------|--------|
| Compound - Field GC | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Acetone | 57 | | | | | | 31.1 | 13 | | | 1720 |
| 1,1 Dichloroethene | | | | | | | | | | | |
| trans 1,2 Dichloroethene | | | | | | | | | | | |
| 1,1 Dichloroethane | | | | | | | | | | | |
| 2-Butanone (MEK) | | | | | | | | | | | |
| cis 1,2 Dichloroethene | | | | | | | | | | | |
| 1,2 Dichloroethane | | | 15.4 | | | | | 10.1 | | 317 | 2770 |
| 1,1,1 Trichloroethane | | | | | | | | | | | 445 |
| Benzene | | | | | | | | | | 7860 | |
| Carbon tetrachloride | | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | | | | | | | | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | | |
| Toluene | | | | | | | | | | 253 | 658 |
| Tetrachloroethene | | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | | | |
| Ethylbenzene | | | | | | | | | | 3100 | 3110 |
| m+p Xylene | | | | | | | | | | 10800 | 10100 |
| Styrene | | | | | | | | | | | |
| o Xylene | | | | | | | | | | 790 | |
| TOTAL VOCs (PPM) | 0.0574 | 0 | 0.0154 | 0 | 0 | 0 | 0.0311 | 0.0231 | 0 | 23.12 | 18.803 |

| chk'd to 3/14/96 | GP82 | GP83 | GP-1/31/96-TB | GP84 | GP85 | GP85 Dup | GP86 | FB 2/1/96 | TB 2/1/97 | GP87 | GP87 Dup |
|-----------------------------|-------|--------|---------------|------|------|-------------|------|--------------|--------------|------|-------------|
| Compound - Field GC | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Acetone | 4450 | | | | | | | | | 3900 | 3000 |
| 1,1 Dichloroethene | | | | | | | | | | | |
| trans 1,2 Dichloroethene | | | | | | | | | | | |
| 1,1 Dichloroethane | | | | | | | | | | | |
| 2-Butanone (MEK) | | | | | | | | | | | |
| cis 1,2 Dichloroethene | | | | | | | | | | | |
| 1,2 Dichloroethane | 3460 | | 44.4 | | | | | | | | |
| 1,1,1 Trichloroethane | | | | | | | | | | | |
| Benzene | 3430 | | | | | | | | | 410 | 420 |
| Carbon tetrachloride | | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | | | | | | | | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | | |
| Toluene | | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | | | |
| Ethylbenzene | 4320 | | | | | | | | | 250 | 260 |
| m+p Xylene | 13800 | 16.7 | | | | | | | | | 32 |
| Styrene | | | | | | | | | | | |
| o Xylene | | | | | | | | | | | |
| TOTAL VOCs (PPM) | 29.46 | 0.0167 | 0.0444 | 0 | 0 | 0 | 0 | | | 4.56 | 3.712 |

| chk'd to 3/14/96 | GP88 | GP89 | FB 2/5/96 | TB 2/5/97 | FB 2/6/96 | GP90 | GP91 | GP92 | GP93 | GP94 | GP95 | GP96 |
|-----------------------------|-------|------|--------------|--------------|--------------|-------|--------|--------|--------|------|------|------|
| Compound - Field GC | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Acetone | 159 | 2910 | | | | 3960 | | 81.5 | 42.7 | | | |
| 1,1 Dichloroethene | | | | | | | | | | | | |
| trans 1,2 Dichloroethene | | | | | | | | | | | | |
| 1,1 Dichloroethane | | | | | | 940 | | | | | | |
| 2-Butanone (MEK) | | | | | | 504 | | | | | | |
| cis 1,2 Dichloroethene | | | | | | 25700 | | | | | | |
| 1,2 Dichloroethane | | | | | | | | | | 10 | | |
| 1,1,1 Trichloroethane | | | | | | 226 | | | | | | |
| Benzene | | 1060 | | | | 8260 | | | 5 | | | |
| Carbon tetrachloride | | | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | | | | | 8960 | 10.1 | | | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | | | |
| Toluene | | | | | | 18300 | | | | | | |
| Tetrachloroethene | | | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | 5.6 | | | |
| Ethylbenzene | | 1050 | | | | 4530 | | | | | | |
| m+p Xylene | | 4450 | | | | 18800 | 6.1 | | | | | |
| Styrene | | | | | | | | | | | | |
| o Xylene | | | | | | 2830 | | | | | | |
| TOTAL VOCs (PPM) | 0.159 | 9.47 | | | | 93.01 | 0.0162 | 0.0815 | 0.0533 | 0.01 | 0 | 0 |

| chk'd to 3/14/96 | GP97 | GP98 | TB 2/6/96 | GP99 | GP100 | GP101 | GP102 | GP103 | GP104 | GP-2/6/96-TB | GP105 |
|-----------------------------|------|------|--------------|------|-------|-------|-------|-------|--------|--------------|--------|
| Compound - Field GC | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Acetone | | | | | | | | | 47.9 | | 205 |
| 1,1 Dichloroethene | | | | | | | | | | | 7.2 |
| trans 1,2 Dichloroethene | | | | | | | | | | | |
| 1,1 Dichloroethane | | | | | | | | | | | 20.1 |
| 2-Butanone (MEK) | | | | | | | | | | | |
| cis 1,2 Dichloroethene | | | | | | | | | | | 42.1 |
| 1,2 Dichloroethane | | | | | | | | | | | |
| 1,1,1 Trichloroethane | | | | | | | | | | | |
| Benzene | | | | | | | | | | | 52.5 |
| Carbon tetrachloride | | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | | | | | | | | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | | |
| Toluene | | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | | | |
| Ethylbenzene | | | | | | | | | | | |
| m+p Xylene | | | | | | | | | | | |
| Styrene | | | | | | | | | | | |
| o Xylene | | | | | | | | | | | |
| TOTAL VOCs (PPM) | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0.0479 | 0 | 0.3269 |

| chk'd to 3/14/96 | GP106 | GP107 | GP-2/6/96-FB | GP-2/7/96-TB | GP-2/7/96-FB | FB 2/7 Dup | GP108 | FB 2/8/96 | GP109 | GP110 |
|-----------------------------|--------|--------|--------------|--------------|--------------|---------------|--------|--------------|-------|-------|
| Compound - Field GC | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Acetone | 37.5 | 860 | | | | | | | | |
| 1,1 Dichloroethene | | | | | | | | | | |
| trans 1,2 Dichloroethene | | 14.3 | | | | | | | | |
| 1,1 Dichloroethane | | | | | | | | | | |
| 2-Butanone (MEK) | | | | | | | | | | |
| cis 1,2 Dichloroethene | | | | | | | | | | |
| 1,2 Dichloroethane | | | | | 24 | 23 | | | | |
| 1,1,1 Trichloroethane | | | | | 12 | 12 | | | | |
| Benzene | 118 | 5320 | | | | | | | | |
| Carbon tetrachloride | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | 18.4 | | | | | 6.1 | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | |
| Toluene | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | | |
| Ethylbenzene | | | | | | | | | | |
| m+p Xylene | | | | | | | | | | |
| Styrene | | | | | | | | | | |
| o Xylene | | | | | | | | | | |
| TOTAL VOCs (PPM) | 0.1555 | 6.2127 | 0 | 0 | 0.0359 | 0.03552263 | 0.0061 | | 0 | 0 |

| chk'd to 3/14/96 | GP111 | GP112 | GP113 | GP114 | GP115 | TB 2/8/96 | GP116 | GP117 | GP118 | GP119 | GP120 | GP121 |
|-----------------------------|-------|-------|-------|--------|-------|--------------|--------|-------|-------|--------|-------|-------|
| Compound - Field GC | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Acetone | | 172 | | 53.3 | | | 240 | 175 | | 16.6 | 719 | 4780 |
| 1,1 Dichloroethene | | | | | | | | | | | | |
| trans 1,2 Dichloroethene | | | | | | | | | | | | |
| 1,1 Dichloroethane | | | | | | | | | | | | |
| 2-Butanone (MEK) | | | | | | | | | | | | |
| cis 1,2 Dichloroethene | | | | | | | | | | | | |
| 1,2 Dichloroethane | | | | | | | | | | | | |
| 1,1,1 Trichloroethane | | | | | | | | | | | | |
| Benzene | | | | | | | 710 | | | 5.2 | 131 | 4580 |
| Carbon tetrachloride | | | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | | | | | | | | | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | | | |
| Toluene | | | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | | | |
| Chlorobenzene | | | | | | | 49.6 | | | 10.6 | | |
| Ethylbenzene | | | | | | | 666 | | | | | 635 |
| m+p Xylene | | | | | | | 4550 | | | | 245 | 6625 |
| Styrene | | | | | | | | | | | | |
| o Xylene | | | | | | | | | | | | |
| TOTAL VOCs (PPM) | 0 | 0.172 | 0 | 0.0533 | 0 | | 6.2156 | 0.175 | 0 | 0.0324 | 1.095 | 16.62 |

| chk'd to 3/14/96 | GP122 | GP123 | GP124 | GP125 | GP126 | GP127 | GP127 Dup | GP128 | GP129 | GP130 | GP-2/9/96-TB |
|-----------------------------|-------|-------|-------|-------|--------|--------|--------------|-------|-------|-------|--------------|
| Compound - Field GC | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Acetone | 834 | 6000 | 3810 | | 51.4 | 13.4 | 28 | | | 168 | |
| 1,1 Dichloroethene | | | | | | | | | | | |
| trans 1,2 Dichloroethene | | | | | | | | | | | |
| 1,1 Dichloroethane | | | | | | | | | | | |
| 2-Butanone (MEK) | | | | | | | | | | | |
| cis 1,2 Dichloroethene | | | | | | | | | | | |
| 1,2 Dichloroethane | | | | | | | | | | | |
| 1,1,1 Trichloroethane | | | | | | | | | | | |
| Benzene | | 1590 | 6950 | | | | 5.2 | 506 | | | |
| Carbon tetrachloride | | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | | | | | | | | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | | |
| Toluene | | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | | |
| Chlorobenzene | | | | | 15.1 | 6 | 9 | | | | |
| Ethylbenzene | | | | | | | | | | | |
| m+p Xylene | | 2090 | | | | | | 4870 | | | |
| Styrene | | 8940 | | | | | | | | | |
| o Xylene | | | | | | | | | | | |
| TOTAL VOCs (PPM) | 0.834 | 18.62 | 10.76 | 0 | 0.0665 | 0.0194 | 0.0422 | 5.376 | 0 | 0.168 | 0 |

| chk'd to 3/14/96 | GP-2/12-96-FB | GP-2/12/96-TB | GP57A | GP68A | | GP132 | GP133 | GP133 | FB 2/19/96 | TB 2/19/96 | GP134 |
|-----------------------------|---------------|---------------|-------|-------|------|-------|--------|--------|---------------|---------------|--------|
| Compound - Field GC | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Acetone | | | 1400 | 348 | | | 61.6 | 58 | | | 412 |
| 1,1 Dichloroethene | | | | | | | | | | | |
| trans 1,2 Dichloroethene | | | | | | | | | | | |
| 1,1 Dichloroethane | | | | | | | | | | | |
| 2-Butanone (MEK) | | | | | | | | | | | |
| cis 1,2 Dichloroethene | | | | | | | | | | | |
| 1,2 Dichloroethane | | | | | | | | | | | |
| 1,1,1 Trichloroethane | | | | | | | | | | | |
| Benzene | | | 44700 | | | | 5.1 | 5.1 | | | 1100 |
| Carbon tetrachloride | | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | | | | | | | | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | | |
| Toluene | | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | | | |
| Ethylbenzene | | | | | | | | | | | 84.1 |
| m+p Xylene | | | | | | | | | | | 16.5 |
| Styrene | | | | | | | | | | | 16.1 |
| o Xylene | | | | | | | | | | | |
| TOTAL VOCs (PPM) | 0 | 0 | 46.1 | 0.348 | 0 | 0 | 0.0667 | 0.0631 | | | 1.6287 |

| chk'd to 3/14/96 | GP135 | GP136 (R) | GP137 (R) | GP138 (R) | GP139 | GP139 Dup | GP140 (R) | GP141 (R) | GP142 (R) | GP-2/20/96-FB | GP-2/20/96-TB |
|-----------------------------|-------|-----------|-----------|-----------|--------|--------------|-----------|-----------|-----------|---------------|---------------|
| Compound - Field GC | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Acetone | | 19.2 | | | 50.2 | 32.4 | 21.3 | | | | |
| 1,1 Dichloroethene | | | | | | | | | | | |
| trans 1,2 Dichloroethene | | | | | | | | | | | |
| 1,1 Dichloroethane | | | | | | | | | | | |
| 2-Butanone (MEK) | | | | | | | | | | | |
| cis 1,2 Dichloroethene | | | | | | | | | | | |
| 1,2 Dichloroethane | | | | | | | | | | | |
| 1,1,1 Trichloroethane | | | | | | | | | | | |
| Benzene | | 5.3 | | | | | | | | | |
| Carbon tetrachloride | | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | | | | | | | | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | | |
| Toluene | | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | | | |
| Ethylbenzene | | | | | | | | | | | |
| m+p Xylene | | | | | | | | | | | |
| Styrene | | | | | | | | | | | |
| o Xylene | | | | | | | | | | | |
| TOTAL VOCs (PPM) | 0 | 0.0245 | 0 | 0 | 0.0502 | 0.0324 | 0.0213 | 0 | 0 | 0 | 0 |

| chk'd to 3/14/96 | GP-2/29/96-TB | | GP148 | GP149 | GP150 | GP151 | GP152 | GP153 | GP-3/1/96-FB | GP-3/1/96-TB |
|-----------------------------|---------------|------|-------|-------|-------|-------|-------|-------|--------------|--------------|
| Compound - Field GC | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Acetone | | | | | | | | 15 | | |
| 1,1 Dichloroethene | | | | | | | | | | |
| trans 1,2 Dichloroethene | | | | | | | | | | |
| 1,1 Dichloroethane | | | | | | | | | | |
| 2-Butanone (MEK) | | | | | | | | | | |
| cis 1,2 Dichloroethene | | | | | | | | | | |
| 1,2 Dichloroethane | | | | | | | | | | |
| 1,1,1 Trichloroethane | | | | | | | | | | |
| Benzene | | | | | | | | | | |
| Carbon tetrachloride | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | | | | | | | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | |
| Toluene | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | | |
| Ethylbenzene | | | | | | | | | | |
| m+p Xylene | | | | | | | | | | |
| Styrene | | | | | | | | | | |
| o Xylene | | | | | | | | | | |
| TOTAL VOCs (PPM) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.015 | 0 | 0 |

| chk'd to 3/14/96 | GP154 | GP155 | GP156 | GP157 | GP158 | GP159 | GP160 | GP161 | GP-3/4/96-FB | GP-3/4/96-TB | SW101 |
|-----------------------------|-------|-------|--------|-------|-------|-------|-------|-------|--------------|--------------|-------|
| Compound - Field GC | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Acetone | | | 34 | 38 | | | <20 | | | | |
| 1,1 Dichloroethene | | | | | | | | | | | |
| trans 1,2 Dichloroethene | | | | | | | | | | | |
| 1,1 Dichloroethane | | | | | | | | | | | |
| 2-Butanone (MEK) | | | | | | | | | | | |
| cis 1,2 Dichloroethene | | | | | | | | | | | |
| 1,2 Dichloroethane | | | | | | | | | | | |
| 1,1,1 Trichloroethane | | | | | | | | | | | |
| Benzene | | | 38.8 | | | | | | | | 1180 |
| Carbon tetrachloride | | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | | |
| 4-Methyl-2-pentanone (MIBK) | | | | | | | | | | | |
| 1,1,2 Trichloroethane | | | | | | | | | | | |
| Toluene | | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | | | |
| Ethylbenzene | | | | | | | | | | | |
| m+p Xylene | | | | | | | | | | | |
| Styrene | | | | | | | | | | | |
| o Xylene | | | | | | | | | | | |
| TOTAL VOCs (PPM) | 0 | 0 | 0.0728 | 0.038 | 0 | 0 | 0 | 0 | 0 | 0 | 1.18 |

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